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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/088,613	07/01/2002	Wendell B. Colson	4686/00008	5511

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EXAMINER

AFTERGUT, JEFF H

ART UNIT	PAPER NUMBER
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1733

DATE MAILED: 09/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/088,613	COLSON ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jeff H. Aftergut	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 and 7-44 is/are pending in the application.
- 4a) Of the above claim(s) 9-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 8 and 19-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)            |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____  |

***Election/Restrictions***

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-4, 7, 8, and 19-44, drawn to an apparatus for making a nonwoven fabric.

Group II, claim(s) 17 and 18, drawn to a method of making a nonwoven fabric.

Group III, claim(s) 9-16, drawn to a sail cloth nonwoven fabric.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the nonwoven fabric of Group III is known per se as evidenced by Krueger who expressed a density of 1-60 yarns per linear inch in the nonwoven fabric therein (see Krueger US Patent 4,556,440). Note that it is immaterial the manner in which one made the fabric in the article of Group III and the common special technical feature is therefore lacking from all of the claims.

3. During a telephone conversation with Ernest Linek on August 2004 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-4, 7, 8, and 19-44. Affirmation of this election must be made by applicant in replying to this Office action. Claims 9-18 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 7, 30 and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, lines 1-2, the language "said radial wheel" lacks proper antecedent basis as no such radial wheel is defined in claim 1. It is suggested that claim 7 be made dependent upon claim 3 which first introduced the subject matter of the radial wheel to the claimed invention.

In claim 30, the claim depends upon claim 29 and it is identical to claim 29. It either must be amended to recite some additional limitation therein not present in claim 29 or must be made to depend upon a different claim. Note that claim 32 depends upon claim 30 and is therefore also rejected herein.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 1-4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Usui '691 in view of Diehl.

Usui '691 suggested that it was known at the time the invention was made to form a non-woven fabric with an apparatus which included a warp yarn support system including a plurality of bobbins 16 which supply warp yarns 10 which are guided through a support ring 14 and onto a cylindrical support structure 23. The reference suggested that the yarns 10 were dispensed from the spools 16 and positioned side by side with the assist of the ring 14 along the length of the cylindrical surface 23. The device further included a delivery system for the weft yarn material included a drum 21 with a plurality of bobbins 22 mounted thereon for rotation about the support structure 23. The reference additionally suggested that the drum was driven for rotation by a power means including a motor 25 and a belt 251 arrangement. The reference also suggested that the weft yarns were wrapped about the warp yarns of the arrangement. The reference further suggested that a take up system downstream of the weft yarn delivery system which was operatively connected to the warp yarn for moving the warp yarns along the support and through the weft yarn delivery system was included which included the endless belt 13 which was driven through the arrangement with drive roller 11. The warp yarns were disposed upon the belt 13 which was preshaped to the configuration of the cylinder 23 and then driven through the weft placement device in the operation by the drive 11. The reference also suggested that the drive for the take up and the drive for the rotation of the weft was controlled with a controller 8 which made it such that the drives are independent of each other and the angle of the weft

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relative to the warp was capable of variance. The reference failed to teach that one skilled in the art would have supplied a warp yarn with an adhesive coating thereon (however note that the actual claim is an apparatus claim and the reference to Usui is certainly capable of feeding a yarn with an adhesive coating thereon as the claims are directed to an apparatus for manufacture and not a process). It should be noted that the weft in Usui '691 was stated to have an adhesive coating thereon. The reference also failed to teach a guide system for feeding the weft yarn from the source to the warp yarn (i.e. a separate guide mechanism which contacted the yarn between the bobbin and the warp yarns in the operation during rotation of the drum). Lastly, the reference failed to teach that one skilled in the art at the time the invention was made would have incorporated a heater downstream of the weft yarn delivery system for activating the adhesive to bond the warp and weft together.

Applicant is advised that the use of a guide mechanism between the weft bobbin and the warp placement of the same was known per se in the art of forming a nonwoven as well as the use of a heater arrangement to set an adhesive on the assembly as suggested by Diehl. Diehl suggested that a winding drum or ring would have been provided with a plurality of spools thereon for application of a weft to a warp assembly. The reference suggested that as depicted in Figure 36, the ring 311 was provided with spools 316. The weft strands 29 passed from the cops 316 through the eyelets 318 supported above the cops by bracket 317 and then pass through eyelets 319 of guide plate 320 and onto the support for formation of the weft assembly of the nonwoven fabric. The use of additional guides including the guide plate 320 with eyelets

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319 would have ensured the proper spacing and placement of the weft relative to its desired position in the finished assembly and relative to other weft yarns. Additionally, the reference to Diehl suggested that one skilled in the art at the time the invention was made would have included a heating mechanism which included a pair of heated rollers for setting the adhesive in the nonwoven assembly to ensure the fibers of the warp and weft were joined in their proper disposition. More specifically, applicant is referred to rollers 36 and 37 which were stated to be heated as necessary in order to set the thermosetting adhesive in the assembly to retain the fibers in their desired local, see column 7, lines 59-64. It should be noted that other means for heating the assembly including heated shoes 600 were recognized by Diehl as useful for heating the adhesive in the assembly to polymerize (cure) the same to set the assembly in place. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the additional guide mechanism of Diehl for the weft threads therein (in order to ensure proper spacing of the weft threads and placement at a specified angle relative to the warp) as well as a heating assembly to set the resin in the assembly of Usui '691 as such would have ensured that the fibers were retained in their proper orientation in the operation of manufacturing a nonwoven fabric utilizing the device of Usui '691.

With regard to claim 2, note that the weft yarns were supplied by spools in both Diehl and Usui '691. Regarding claim 3, note that the drum structure recited was envisioned by both Diehl and Usui '691. More specifically, note Figure 36 of Diehl where the inner guide plate 320 was located radially inward from the spools of the weft thread. Regarding claim 4, note that the weft threads were fed from the supply to the radially

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disposed guide in Diehl and therefore one skilled in the art would have understood that the same was fed along the guide to the proper location on the warp threads. The applicant is advised regarding claim 8 that the claims are directed to an apparatus and certainly the apparatus as set forth above is capable of applying 40-100 wefts yarns per inch along the length of the warp.

9. Claims 3, 4, 7, 19- 38, and 42-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 8 further taken with any one of Usui '424, Rothemeyer et al, Kaczerginski, or Muller.

While the references as set forth above in paragraph 8 suggested the overall operation, they failed to expressly state that a conical guide member was associated with the weft for placement of the weft upon the form. It should be noted that the prior art set forth above suggested that those skilled in the art at the time the invention was made would have incorporated a guide mechanism between the dispensing of the weft from a spool and the application of the weft threads upon the warp in the nonwoven manufacture (see Diehl).

The references to any one of Usui '424, Rothemeyer et al, Kaczerginski, or Muller suggested that those skilled in the art at the time the invention was made would have known how to apply fibers upon a cylindrical form wherein the same included the use of a conical shaped guide mechanism which allowed the fibers be disposed upon the form in their desired location. More specifically, the reference to Usui '424 suggested that one skilled in the art at the time the invention was made would have incorporated a guide mechanism which included a conical guide surface in the coating



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of the weft 20 with adhesive, see Figure 17 and 18, for example. Additionally, note that Usui '424 incorporated plural guide mechanisms between the supply spool and the local of deposition of the weft yarns. The reference to Rothemeyer et al suggested that one skilled in the art would have employed conical guides 2a and 2b for guiding the fibers upon the form from the supply spools to the form in the manufacture of a composite article. The reference to Muller suggested that one skilled in the art would have employed a form with a conical shaped nose 38 for application of the fibers upon the cylindrical form in the manufacture of a composite article. Lastly, the reference to Kaczerginski suggested that one skilled in the art at the time the invention was made would have incorporated a guide mechanism 57 for guiding the fibers upon the form in the manufacture of a composite article. As it was an art recognized guide mechanism for guiding fibers upon a cylindrical form in the placement of fibers upon cylindrical form, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the conical guides of any one of Usui '424, Rothemeyer et al, Kaczerginski, or Muller in the device as set forth above in paragraph 8 for forming a nonwoven assembly.

With regard the use of an endless belt arrangement for driving the warp yarns through the arrangement, note that the reference to Usui suggested the same. Regarding the use of an adhesive coating, note that this is the material being worked upon and as such is given little or no weight in the apparatus claim. The claim as presented does not include a coater for the adhesive onto the strands. Regarding the particular angle of the conical guide, the references to any one of Usui '424,

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Rothemeyer et al, Kaczerginski, or Muller appear to suggest the specified angle as claimed. Regarding the use of a supply of weft from a spool, as addressed above in paragraph 8 such was taught by the prior art of record. Regarding the use of a drum for application of the weft with the radial wheel arrangement, the references as set forth above in paragraph 8 appear to suggest the same. It should be noted that the addition of the conical guide in combination with the same would have been within the purview of the ordinary artisan. Regarding the number of warp or weft yarns per inch, applicant is advised that the references suggested that one skilled in the art would have applied the warp and/or weft yarns to achieve the desired final product. The machine appears capable of achieving this density in processing. Note that it is unclear what if any additional limitation is presented by this language. Regarding the use of a heater means, the reference to Diehl suggested the same. Note additionally, the use of a control system to control the rate of application of the yarn as a function of the speed of feed of the warp and weft was known as evidenced by Usui.

10. Claims 39-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as set forth above in paragraph 9 further taken with Whisler et al.

While the references as set forth above in paragraph 9 suggested the overall operation wherein the resin was heated to cure the same after the fibers were assembled together, the combination failed to teach that one skilled in the art would have incorporated a cooling means with the heating means in order to bring the assembly back closer to room temperature after processing the same with heat. However, the use of a cooling means in combination with the heating means was known

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as evidenced by Whisler. Whisler suggested that those skilled in the art at the time the invention was made would have not only incorporated a heating means to laminate the fiber layers together in the nonwoven assembly but additionally suggested that one skilled in the art would have incorporated a follow up cooling means in combination with the same. More specifically, the reference suggested that two heated rollers 160 and 162 would have been heated with a radiant heater 168 while a chilled roller 164 would have been disposed downstream of the arrangement in order to cool the assembly after the bonding operation to bring the assembled nonwoven closer to room temperature. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of Whisler in the operation of making a nonwoven fabric assembly wherein after the heating of the assembly one would have applied a chill roller to the arrangement in order to cool the bonded web of material.

### ***Conclusion***

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Bascom et al suggested a process and device for forming a nonwoven on a cylindrical form.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Blaine Copenheaver can be reached on 571-272-1156. The fax phone

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number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Jeff M. Aftergut  
Primary Examiner  
Art Unit 1733

JHA  
September 21, 2004